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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/833,249	04/11/2001	Robert Hundt	10005460-1	3717

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HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, CO 80527-2400

EXAMINER

INGBERG, TODD D

ART UNIT	PAPER NUMBER
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2124

DATE MAILED: 12/23/2003

3

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/833,249

Applicant(s)

HUNDT ET AL.

Examiner

Todd Ingberg

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 September 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 4/11/2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claims 1 – 15 have been examined.

Information Disclosure Statement

1. The information disclosure statement filed September 17, 2001 has been considered.

Drawings

2. Drawings filed are accepted by the Examiner.

Interpretations

3. The following interpretations are the interpretations of the Examiner for the prosecution of this case. In the event the Applicant disagrees with an interpretation(s), the Applicant must provide a technical explanation why the Examiner's understanding (interpretation) is incorrect.

A. ***Entry and Endpoints*** – The applicant's terms are understood to identify a software module.

In compiler theory the term "basic block" is often used in the run time environment the term module or package is often the term to refer to a module.

B. ***Symbol Table*** – An inherent part of a compiler where the names and values associated with variables, constants and functions are stored.

C. ***Program Lookup Table*** – An inherent part of a compiler where the name of procedures are stored. On page 475 of the Aho reference the symbol table for a nested procedure is shown in figure 8.12.

Claim Rejections - 35 USC § 102

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(c) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who

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has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. Claims 1 – 10 and 13 - 15 are rejected under 35 U.S.C. 102(a,b,e) as anticipated by the commercial product **Borland Profiler**.

Claim 1

Borland's Profiler anticipates a computer-implemented method for analysis of executable program code the executable program including segments of code that correspond to callable function source code from which the executable code was generated (**Profiler**, page 14, shows the user can select the statistics to be displayed - Options include Time, Counts, Both, Per Call, Longest Modules), comprising: reading from the executable program code pairs of entry points and endpoints (**Profiler**, page 14 – a module by definition has a entry and exit point) each pair including an entry point and an endpoint that are associated with a callable function in the source code and corresponding to a segment of the executable program code; and generating analysis data for the functions identified by the pairs of entry points and end points (**Profiler**, the analysis is of modules).

Claim 2

The method of claim 1, further comprising scanning the executable program code for selected characteristics using the pairs of entry points and endpoints (**Profiler**, page 14, shows the user can select the statistics to be displayed - Options include Time, Counts, Both, Per Call, Longest Modules).

Claim 3

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The method of claim 1, further comprising: executing the program code; detecting execution of the functions using the pairs of entry points and endpoints; and recording selected execution characteristics of each executed function. (**Profiler**, page 14, shows the user can select the statistics to be displayed - Options include Time, Counts, Both, Per Call, Longest Modules).

Claim 4

The method of claim 1, wherein the executable program code includes one or more dynamic load modules, the method further comprising: reading entry points of initializer and deinitializer functions from dynamic load modules; pairing the entry points of the initializer and deinitializer functions with endpoints of the initializer and deinitializer functions; and generating analysis data for the initializer and de-initializer functions identified by the pairs of entry points and end points of the initializer and deinitializer functions. (**Profiler**, page 14, shows the user can select the statistics to be displayed - Options include Time, Counts, Both, Per Call, Longest Modules – interpreted to be the ability to clear a counter and begin counting to measure the metrics shown in the reference).

Claim 5

The method of claim 4, wherein the executable program code includes a procedure lookup table (PLT) table associated with the one or more dynamic load modules, the method further comprising: reading function entry points from the PLT; pairing the entry points from the PLT with endpoints; and generating analysis data for the PLT functions identified by the pairs of entry points and end points of the PLT functions. (**Profiler**, page 14, shows the user can select the statistics to be displayed - Options include Time, Counts, Both, Per Call, Longest Modules – interpreted to be the ability to clear a counter and begin counting to measure the metrics shown in the reference). One of ordinary skill in the art should know that a function name contains a pointer to the function (program languages such as C) in the symbol table for a procedure the name of the procedure, type and offset are recorded.

Claim 6

The method of claim 4, further comprising scanning the executable program code for selected characteristics using the pairs of entry points and endpoints. (**Profiler**, page 14, shows the user can select the statistics to be displayed - Options include Time, Counts, Both, Per Call, Longest

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Modules – interpreted to be the ability to clear a counter and begin counting to measure the metrics shown in the reference).

Claim 7

The method of claim 4, further comprising executing the program code; detecting execution of the functions using the pairs of entry points and endpoints; and recording selected execution characteristics of each executed function. (**Profiler**, page 14, shows the user can select the statistics to be displayed - Options include Time, Counts, Both, Per Call, Longest Modules – interpreted to be the ability to clear a counter and begin counting to measure the metrics shown in the reference).

Claim 8

The method of claim 4, wherein the program code includes a symbol table identifying one or more function entry points the method further comprising: reading entry points of functions from the symbol table; pairing the entry points from the symbol table with endpoints; and generating analysis data for the symbol table functions identified by the pairs of entry points and end points of the symbol table functions. (**Profiler**, page 14, shows the user can select the statistics to be displayed - Options include Time, Counts, Both, Per Call, Longest Modules – interpreted to be the ability to clear a counter and begin counting to measure the metrics shown in the reference).

Claim 9

The method of claim 1, wherein the program code includes a symbol table comprising: one or more function entry points, the method further comprising: reading entry points of functions from the symbol table; pairing the entry points from the symbol table with endpoints; and generating analysis data for the symbol table functions identified by the pairs of entry points and end points of the symbol table functions. (**Profiler**, page 14, shows the user can select the statistics to be displayed - Options include Time, Counts, Both, Per Call, Longest Modules – interpreted to be the ability to clear a counter and begin counting to measure the metrics shown in the reference).

Claim 10

The method of claim 1, further comprising: detecting function calls at runtime, finding the entry point of a runtime-detected function call: pairing an endpoint with the entry point of a runtime-detected function call, and generating analysis data for functions identified by pairs of entry

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points and end points of the runtime-detected function calls. (**Profiler**, page 14, shows the user can select the statistics to be displayed - Options include Time, Counts, Both, Per Call, Longest Modules – interpreted to be the ability to clear a counter and begin counting to measure the metrics shown in the reference).

Claim 13

The method of claim 10, wherein the executable program code includes one or more dynamic load modules, the method further comprising: reading entry points of initializer and deinitializer functions from dynamic load modules; pairing the entry points of the initializer and deinitializer functions with endpoints of the initializer and deinitializer functions; and generating analysis data for the initializer and de-initializer functions identified by the pairs of entry points and end points of the initializer and deinitializer functions. (**Profiler**, page 14, shows the user can select the statistics to be displayed - Options include Time, Counts, Both, Per Call, Longest Modules – interpreted to be the ability to clear a counter and begin counting to measure the metrics shown in the reference).

Claim 14

The method of claim 13, wherein the executable program code includes a procedure lookup table (PLT) table associated with the one or more dynamic load modules, the method further comprising: reading function entry points from the PLT; pairing the entry points from the PLT with endpoints; and generating analysis data for the PLT functions identified by the pairs of entry points and end points of the PLT functions. (**Profiler**, page 14, shows the user can select the statistics to be displayed - Options include Time, Counts, Both, Per Call, Longest Modules – interpreted to be the ability to clear a counter and begin counting to measure the metrics shown in the reference). One of ordinary skill in the art should know that a function name contains a pointer to the function (program languages such as C) in the symbol table for a procedure the name of the procedure, type and offset are recorded.

Claim 15

An apparatus for analysis of executable program code, the executable program including segments of code that correspond to callable code source code from which the executable code was generated comprising means for reading from the executable program code pairs of entry points and endpoints, each pair including an entry point and an endpoint that are associated with

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a callable function in the source code and corresponding to a segment of the executable program code; and means for generating analysis data for the functions identified by the pairs of entry points and end points. (**Profiler**, page 14, shows the user can select the statistics to be displayed - Options include Time, Counts, Both, Per Call, Longest Modules – interpreted to be the ability to clear a counter and begin counting to measure the metrics shown in the reference).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Borland.

One of ordinary skill in the art of programming should understand a ***stub procedure*** is one where the programmer (or CASE tool) has deliberately written a procedure that immediately returns control to the caller usually with a single entry in the procedure with a null or return line. The procedure in the compiler generates all the needed overhead such as the entry in the symbol table and PLT – however the offset is very small.

Rejection for claims 11 and 12

Borland teaches Profiling computer programs made up of procedures. Borland does not explicitly teach the procedure as being a stub procedure. However, the Borland profiler does teach the profiling of procedures based on number of times called (**Profiler**, page 14, shows the user can select the statistics to be displayed - Options include Time, Counts, Both, Per Call, Longest Modules) and longest module. Since, stub procedures are short it would be obvious to one of ordinary skill in the art at the time of invention to eliminate stub procedures because a

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program stub does not perform instructions other than the overhead call and the return. Thus the profiler information would be more accurate on the part of the program that are performing.

Claim 11

The method of claim 10, further comprising: detecting execution of stub functions at runtime; and bypassing analysis of stub functions.

Claim 12

The method of claim 1, further comprising: detecting execution of stub functions at runtime; and bypassing analysis of stub functions.

Conclusion

7. Original presentation of the scope of the claims is the instrumentation of code.

Instrumentation that assists in performing profiling of an executable such as the number of times a procedure is run. This is grossly old and well known and the results are shown in the commercial product documentation that shows the statistics of how many times a procedure was run. The *original presentation* of the claims is directed toward class 717 "Software Development, Installation and Management" subclass 158; "Optimization – including instrumentation and profiling". The figure supporting the *original presentation* of the claims is figure 3. The original presentation of the claims does not contain the scope of check pointing. Applicant is made aware of this to prevent issues of restriction by original presentation with the response to this office action.

Correspondence Information

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Todd Ingberg** whose telephone number is (703) 305-9775.

The examiner can normally be reached during the following hours:

Monday

Tuesday

Wednesday

Thursday

Friday

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6:15 – 1:30

6:15- 3:45

6:15 – 4:45

6:15-3:45

6:15-130

This schedule began December 1, 2003 and is subject to change.

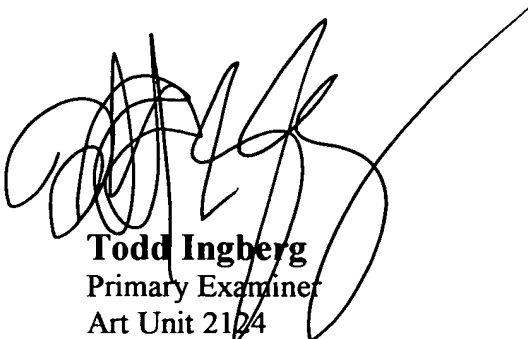
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Kakali Chaki** can be reached on (703) 305-9662. Please, note that as of August 4, 2003 the **FAX number** changed for the organization where this application or proceeding is assigned is **(703) 872-9306**.

Also, be advised the United States Patent Office **new address** is

Post Office Box 1450

Alexandria, Virginia 22313-1450

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-9700.



Todd Ingberg
Primary Examiner
Art Unit 2124
December 13, 2003